## Introduction to botanical medicine for Lyme

Hi and welcome to another episode of the Healing Lyme Summit. I'm your host, Doctor Myriah Hinchey, and in this episode, we are going to talk about one of my great passions, which is the power of botanical medicine in healing Lyme and co-infections.

Joining us is naturopathy physician Jacob Leone. Doctor Leone has over 15 years of experience practicing as an integrative primary care doctor with a focus in complex chronic diseases, including tick borne diseases.

He is the medical director of a successful private health care practice in the state of California, and he frequently lectures at national medical conferences on the subject of infectious diseases and environmental medicine.

Welcome, doctor Leone. Tell our listeners a little bit about yourself and why you came to specialize in treating infectious disease and environmental medicine.

Well, thank you for that kind introduction. It's quite a pleasure to be here. So I got into treating tick borne diseases because the patients, they were coming into my office and wanting help and I that was the initial impetus.

And then subsequently, as I learned more about tick borne diseases, I realized that I had family members that had tick borne diseases. And so then it became personal.

And, it sort of evolved from there. So what are the most commonly used botanicals in your line of treatment when it comes to treating Lyme disease? Yes. So this was kind of my frustration in treating tick borne diseases because like you, I love botanical medicine.

So I came out of naturopathic medical school in 2006. Really, being a purist, I didn't want to use any prescriptions, and I was just treating everyone with naturopathic medicine and getting great results.

A subset of my tick borne disease patients were getting better, but there was a significant subset that I just felt like we weren't getting the results that we needed.

And so part of that was because we just don't have great data on what herbs are best for which patients and which pathogens. And so I kind of went through a whole evolution of beginning with only treating patients with botanical medicine.

And then I started to incorporate a lot of antibiotics into my practice. And there was a subset that responded well to that combination of antibiotics and botanicals, but still there was a subset that I just wasn't feeling like were responding as they should.

## How Dr. Leone got into tick-borne disease care

And so then I started to get into research so that we could really understand how these herbs are working and in terms of their antimicrobial effects, how they work to kill off these pathogens so that we can better understand which herbs work for each pathogen.

And within that, there's this whole concept of persist or cells, which we can talk about if you want or not. But it's one of the reasons why we think some patients will not have a lasting remission from antimicrobial therapy, whether that's an antibiotic or a botanical medicine, because these persist or cells aren't being adequately killed off.

And so my colleague Doctor Sanjay Schwager and I had the good fortune of collaborating with a researcher at Johns Hopkins named Ying Jang to evaluate the effect of a bunch of different botanical medicines on the three

most common tick borne diseases.

We see why and Bartonella. And easier. And so out of that research, it really helped me to understand how these herbs can be better used to treat these different infections.

So in the studies that you're referencing what herbs were looked at, which were the herbs that were studied. So we studied, fairly large panel, you know, with research, we're always limited by funding.

So I would have loved to have studied, even bigger panel, but I think the original Lyme paper, we looked at over 20 different botanicals. Some of them weren't even botanicals.

We looked at a peptide. We looked at grapefruit seed extract. But across those three studies, the Lyme study, the easiest idea in the Bartonella study, what was really interesting is there were four herbs that tested really well across all three infections, and one herb that was really a clear standout that outperformed all the other herbs and outperformed all of the antibiotic controls.

And that's actually a herb called krypto Lepus, which was very surprising to us. It wasn't even meant to be a part of that original panel that we studied, and we kind of added it as a last, addition.

And I'm so thankful we did. You know, it turned out to, to really be the standout herb, but it, works quite well at killing those persistent cells that I reference.

Yeah, I was just going to say that I'm so glad you didn't leave that one out. You know, there's there's some serendipity that that comes into research sometimes.

You know, I spent hours just poring over the existing data.

## Key herbs studied for Lyme and co-infections

We had to really figure out what herbs to prioritize. And, thankfully, you know, when that email came in, when of the botanical formulators that we used to supply the, the herbs just sent an email kind of at the last minute saying I had just got in a good source of crypto.

Lapis, do we want to include it in the study? And we did, thankfully. So what were the other three? You said there were four that stood out. That's right.

Some of us crypto lapis was the standout, but the other three that tested very well were Artemisia annua. The common name for that is Sweet Annie. The third one was public in Casper, Durham.

The common name for that is Japanese knotweed, and the fourth one was a Scuderia back. Leonsis the common name is Chinese skullcap. Yep. They are. That's four of my go to herbs.

Yeah. It's it's it's great. So part of what we did was we just kind of reinforced what a lot of us were already using, you know, because these are herbs that were obviously being used in clinical practice before, but at least in my practice, it really helped me fine tune it.

So as an example, I was using crypto lipids to treat the disease, but I never really thought of it as treating Lyme or Bartonella. And also, you know, there's different ways of prescribing these herbs.

One of the ways in which we try to treat Lyme is post therapy. And so ever since I figured out the crypto Lepus can treat the Borrelia Lyme parakeet, I've been using pulsed dosing with my patients with pretty good success for that purpose.

And so there was a lot of just an ability to fine tune how we use these herbs, even if we were using them previously. Yeah. So how did you find the efficacy rates compared to other traditional medical treatments for Lyme,

Ambedkar and Bartonella?

Yeah. So I should preface that answer by saying that our study was an in vitro study. So this is just test tube models. I would love to do some human data or even animal data.

But in our in vitro model, those four IRBs that I mentioned consistently outperformed the conventional controls. So as an example, in the Lyme study, we used a two antibiotics as controls F piroxicam and doxy cycling.

And those antibiotics worked really well for the active form of brella. What we call the the log or modal, a metabolically active form. But they did not work well for that persist or cell form.

That's not metabolically active. And so the IRBs that was for IRBs did work quite well for both forms, for both the modal and the persist or cell form.

That's great. So, you know, this study I'm pretty familiar with it. And it's interesting. Right. Because like, to me, the way that I practice is, you know, I try to use a combination of verbs where, you know, we're tackling, you know, we're focusing on immune modulation, and then we're focusing on the cytokine cascade.

And then we're focusing on detoxification. Right. And we're just we're looking at all of these different things in the body and trying to like sort of like cover all of these spaces.

But like the fact that this was done in vitro in a test tube, it's like, okay, so we can't really take any of those actions of those IRBs as part of the picture. Right?

So this is, I guess, solely looking at the antimicrobial benefit. So like the antibacterial or anti parasitic or anti BCR effects of these IRBs in this particular study, is that, is that a correct way to think about it.

That's exactly right. All we looked at was antimicrobial effect. And as you correctly point out, the really cool thing about botanical medicines is they have multiple mechanisms of action beyond just that antimicrobial effect.

And that's probably why some of the IRBs that I really expected to test well, that I find do work well in clinical practice, did not test well in our our study.

So as an example, Andrew graph and discuss our two IRBs that I find consistently work well in my Lyme patients but did not test well in our in vitro model.

And there's lots of reasons for that. But one is that we might be seeing more of a host response when we get these IRBs to patients. You know, their immune system might be responding more than a direct antimicrobial effect.

I think that might be true for Andrew Griffiths in particular. And so, you know, I would love to have a multimillion dollar budget to do those different studies to to really evaluate all the different ways in which these IRBs are helping our patients, because clearly they're helping.

You know, I'm sure you're seeing that in your practice. I see it in my practice. The herbs work when you can really match the right herbal combination with the constellation of each patient.

They're amazing. Yeah, I couldn't agree more questions.

## Research findings on efficacy and persistent cells

So for those who are listening, who might be a little bit skeptical, what were these tinctures? Were these, you know, standardized extracts of these herbs?

Were they whole herbs that were powdered like, what was the preparation of these herbs? And before you answer that, I'll tell you why I'm asking. So I would imagine some people are sitting there and they're thinking, oh, well, if it

was a tincture and basically, you know, it's it's like 80 proof, right?

Like, would the alcohol kill these bacteria or parasites? So that's kind of the angle that I'm coming from with this question. No, that's exactly the right question to be asking, because some of the prior research didn't use alcohol controls.

And we do know that alcohol at a certain concentration does kill Borrelia. So that's that's a problem. We did use alcohol controls in our study. So you can look at our studies and you can see how the alcohol on its own performed relative to the herb.

Our herbs were in an alcohol base. And that's another question that needs to be answered is, you know, depending on the type of extract used, you're going to get different active constituents.

And so it may be the case that some herbal medicines, work better against certain pathogens, depending on the extract. Even in our study where we all use, all of our botanicals were extracted via alcohol, we saw a different efficacy based on the percentage of alcohol used.

So there's a lot of nuance here that, that needs to be understood as we really fine tune how we use these botanical medicines. Right. Yeah. No. And I was going to say too, so it's like obviously the different the higher the concentration of alcohol, the more it could have been the alcohol.

But then also the higher concentration of alcohol, like you're pulling different constituents out with alcohol versus water in a tincture. So yeah, there's there's a lot more I guess room for I don't want to say speculation.

And by the way, I wholeheartedly believe in herbal medicine for treating Lyme and tick borne disease. I do not want this to sound like I don't. I primarily use herbal medicine to treat infections.

I rarely use antibiotics unless it is an acute case. So just to put that out there. But I want to make sure people who are a little bit skeptical, like we're kind of covering all of these questions that people might have in their head.

No, I think we need to do further studies so that we can really answer all of those questions because they're great questions. And of course, there's also this challenge in extrapolating a test tube model to a human right.

There's the pharmacokinetics in terms of how you absorb these different botanical constituents and what the right dosing is. And so there's still a lot of research to be done.

This is just scratching the surface, right. Yeah. Well, I'm excited for for you to do it if you can. So we talked about a couple of the mechanisms of action of some of the botanicals.

Would you like to elaborate on that? Yes. So so, you know, I think one of the things that I learned in my evolution and I've really evolved, it sounds like, to practice similarly to you in that I rarely use antibiotics anymore, only in specific cases, like acute exposures.

And so I really rely on the fact that these botanical medicines have so many different mechanisms of action to help patients. And what I realized as I gained knowledge, you know, treating patients over the last 16 years of what are the successes and the failures, I realized that a lot of what I was doing was focusing too much on the killing, right?

Just focusing on killing this pathogen and not focusing on all of the other aspects that it takes to heal from these complex, chronic conditions. And so my mental model for helping a patient get better is really oriented around restoring normal immune function.

I think that's really the key to helping people get better, because there's really no replacement for a fully functioning immune system. There's no botanical, there's no antibiotic that's going to replace that.

And so there's so many different underlying issues that need to be addressed to restore everyone's immune

system. For some people, you do have to kill the infection.

That's part of it. But a lot of my patients have environmental toxicities heavy metals, pesticides, mold exposure, other factors that are impeding their immune system.

And and what I learned is that sometimes you have to focus on those other things before the antimicrobials are really going to do anything for patients.

Or sometimes antimicrobials just make them worse because they're not able to tolerate the Horkheimer die off reaction. That happens when you are effectively killing off these infections.

## Tinctures, alcohol controls, and extract nuances

And so going back to your original question of, you know, talking about the multiple mechanisms of action of the IRBs, that's the really nice thing about these IRBs is you can use IRBs to meet the patient where they're at.

There may be patients that need more detoxification support than antimicrobial support. And so you can use IRBs that really target that anti-inflammatory and detoxification pathway much more than the antimicrobial pathway.

Likewise, a lot of patients I find have hyper coagulation issues. And you really have to deal with the coagulation dysfunction. And of course, that's only gotten worse in the era of Covid.

And so herbs can also be used in that regard to help with coagulation dysfunction. What are your favorite herbs for doing that? Ginger I love ginger for that.

And the other go to is not an herb, but natto kinase, not a kinase. And lumbar kinase I find are immensely useful, I guess very useful. Useful to with, long Covid and spike protein and things of that nature too.

Exactly. Thanks. Yeah. So I agree, I think the bottom line for me when I'm treating a patient is recovering the immune system because in the end, you know, what I was taught and what I firmly believe is that, you know, whether we're talking about a pharmaceutical antibacterial antibiotic, anti-parasitic or we're talking about an herbal, none of those are going to completely shrink that infection to zero, right?

They only lessen the bacterial or the parasitic load. And you're often going to have, you know, a few stragglers. And in the end, it's the immune system that has to be able to see them and get to them and eradicate them from the body, or at least keep them from being able to replicate.

Right. So I think, you know, definitely fixing that immune system is like the number one goal. But as you said in some people, I mean, it might take focusing on about 16 different things, you know, to be able to fix the immune system.

That's exactly right. It takes a lot of time and heavy lifting to first identify all of the factors that are inhibiting a normal immune response, and then it takes time to treat each of those factors.

And there's kind of the nail analogy where if you have 16 nails in your foot and you remove half of them, you're still not necessarily going to feel any better.

And so there's a lot of trust and persistence that has to be part of the equation with the doctor patient relationship. Because it takes time and a lot of work it does.

It takes a lot of time. So when we're talking about a lot of these herbal medicines, are there risks or side effects that our listeners should be aware of?

Yes. Well, every time we kind of talk in interviews like this, we have to use the disclaimer that that nothing I'm saying is intended to be medical treatment.

I would certainly advise everyone listening to find a practitioner who is trained in using these botanical medicines, because there are potential side effects and interactions that do come into play.

And there's also the the fact that we don't know everything. Right? Some of these herbs, like crypto Lepus, just aren't well studied in humans anyway.

And so there's a lot that we just don't know about them. In the case of crypto lupus, what we do know is, is there are studies that show that it can have bone marrow effects.

So sometimes we see changes in white blood cell or platelet parameters. And there was a study that showed that it can increase alk Phos. So in my patients that are using chronic crypto lupus I do periodic blood tests, CBCp and some hormone levels.

It might also affect hormones just to make sure that we're not having a negative effect. And likewise some of these herbs have blood thinning effects.

So you have to be conscious of how they might interact with other medications or patients who are undergoing surgery. That is an important piece is that patients should be overseen by a provider that understands all of those technicalities, right?

Yeah, I agree, I mean, there's definitely interactions with other medications and whatnot. And, you know, it would probably take us two hours to go through the 30 or so herbs that are effective in treating vector borne disease and what each one of their possible interactions and contraindications are.

So that was definitely a loaded question. Okay. So when you're working with botanical medicine, what do you like to work with? Can you talk a little bit about like the difference between a whole herb versus, you know, a standardized extract where they just plucked out, you know, one constituent and which you think is better versus using tinctures, just kind of go on about that whole entire subject.

Yeah, sure. That's another multi-hour talk I could give. But what I like in my practice is a tinctures for patients who can tolerate alcohol use the alcohol based ones, because I think on the whole, they do work better than the it's.

But some of my patients can't tolerate alcohol and so I'll use cluster. It's for them or for kids who, you know, don't love the taste. I think that the tinctures were great, both because of efficacy in terms of their ability to pull out constituents, but also being able to precisely titrate the dosing.

## Mechanisms beyond antimicrobial action

So many of my patients are really sensitive. And so we are sometimes starting with just a drop in water and just taking a sip of that. And just slowly working up from there.

And so having a liquid tincture just really helps with titrating dosing. I also, am a purist when it comes to botanical medicine. I think that the whole herb is better than the individual constituent.

One of the things that we're seeing in the research, in terms of artemisinin, which is an active constituent from one of those forbs that I mentioned, Artemisia, the conventional world actually extracted artemisinin and very, broadly has used it for malaria treatment.

In fact, researcher who first extracted her artemisinin won the Nobel Prize because it has dramatically reduced morbidity and mortality for malaria treatment.

However, what we've seen is the malaria organism has developed resistance to artemisinin. And so in the same way that you can get resistance to antibiotics any time you're you're using a single constituent like that, you're not having all of the multi-modal mechanisms of action that we've talked about before.

And so that's one reason why I favor the whole herb. I think there's less likelihood of developing resistance. But also, you know, the whole reason why botanical medicine is effective is, is evolutionarily, these plants have developed their own immune system.

These constituents are part of what helped the plants survive these pathogens in nature. And anytime you're just extracting a single constituent, you may not be utilizing the full benefit of that plant.

You know, Mother Nature is pretty amazing, and its wisdom, and as much as the scientific part of me likes to kind of take that reductionist approach and understand how each constituent works, I recognize that a whole herb might still ultimately work better.

Yeah, I agree, I mean, you have that synergistic effect and not just like the synergism of like one thing helping another thing work better. But again, like with Sweet Annie, like the difference between the whole herb and artemisinin, the extract is that there are other constituents in that whole herb that not only make the artemisinin more effective, but help to offset a lot of the side effects that you commonly see using artemisinin.

That's exactly right. And also absorption, there's there's different constituents that work synergistically to help improve the absorption. So you're exactly right.

There's so many reasons why I think the the whole herbs is better than the individual constituent. Yeah. So I cannot believe it. But we are actually we are at the end of the complimentary portion of this interview.

So before we, we move on and dive deeper, I want you to give all of the listeners your information so that if they would like to become a patient, they know how to get Ahold of you.

And if you have any exciting news to share, please do so. Yes. So, I my practice is just a kind of a small concierge model. I, I've evolved to recognize that I want to have a lot of time treating patients, so I don't take on a lot of patients.

But if anyone is interested, they can call my office at 4140 or email concierge at Healthier focus.com if they're interested in becoming a new patient.

And I am also in the process of putting together a botanical medicine offering, that will be sometime in the future. We will be, launching some botanical medicines to help patients as well.

That's wonderful. All right, so, let's see, did you do you feel like we completed talking about, like, the difference between standardized extracts, whole herb tincture, etc.?

I think you pretty much said you prefer tinctures because of the flexibility with dosing and their ability to pull out a stronger array of constituents.

And it sounds like you, you aren't really using, like, standardized, resveratrol extract or something like that. Yeah. I guess the the two caveats I would give to that is one, I really am a fan of liposomes.

And so we do have access to liposomal artemisinin. And I do find that that's effective. Now I always combine it with other antimicrobials to reduce the chance of resistance.

And then the other thing is, you know, when we're looking going back to this conversation about really helping to standardize botanical medicine treatment, I think there is a role for choosing an active constituent as we try to understand dosing parameters.

I think it it is helpful to standardize a full herbal product to a specific constituents. So we have some measure of what is active in that plant, and then also doing dosing studies to really understand what is the optimal dosing for each pathogen.

Right. And I actually so like that leads me to my next question is, you know, how does the dosage vary depending on the severity of the infection or the specific person that you're trying to treat?

Yes. So as I mentioned earlier, a lot of my patients are really sensitive. You know, my patients tend to have already seen 10 or 20 other practitioners.

## Safety, side effects, and herb quality control

And and so they're usually very complicated in terms of what's going on and their response to treatment. So we're often starting at very low doses and over weeks to months and sometimes years working up to what I would consider a fully therapeutic dose.

I think in terms of truly killing off these pathogens, ultimately you have to get up to at least a teaspoon twice to three times a day, and sometimes higher.

Now, higher than that. I think we have to have a conversation about the fact that we don't really understand, the risk benefit in terms of safety, because for most of these IRBs, we don't have clear toxicology studies. But.

That's sort of the range that I, that I would say is typical in my practice, you know, starting with a drop or less a day, going up to a initial target of one teaspoon and 2 to 3 times a day.

And so as far as drops go. So that would be about like depending on whether you believe 20 drops is a fourth of a teaspoon or 30 drops, it's a fourth of a teaspoon because it differs depending on who you talk to.

Well let's just say we're going with 30. So we're talking about about 120 drops three times a day. Just to give our listeners some perspective. That's right.

Yeah. And each herb is going to have a different response. Right. So so the what overrides everything I just said is the patient's response. Right. So the dosing really has to be titrated based on how patients are responding.

Right. So in addition to the study that you've already referenced, are there other studies that have been done or clinical trials that have been conducted or that are being conducted that you know about, that you can share with the listeners?

Well, there's certainly been other in vitro studies looking at different herbs, either SAP lab has done some studies, the Doc lab GRC has done some studies, but most of them are in vitro test tube studies.

To my knowledge, there's not really any human based studies. My goal is to put together a group of clinicians who are treating, tick borne disease patients so that we can do either a proactive or a retroactive analysis and start generating some data.

Because we're all using not everyone, but there are a number of doctors that are using these botanical medicines in practice. And I think if we could pool our data, we could answer some of these fundamental questions.

Yeah, I definitely think that we could let me know. We have there's three of us in my practice that predominantly use, botanical medicines to treat Lyme and co-infections.

Excellent. Okay. So in addition to just the actual botanicals, how do they fit into a more holistic, treatment approach? Yes, that's a good question. I think, again, the real one that has to be solved for each patient is going back to that list of 16 plus or minus things that are impeding the patient's immune system from being able to do their job.

And so that list is going to look different for everyone. And, you know, for the tick borne disease patients, certainly part of what's on that list are active infections.

But we also need to look at the endocrine system. The, microbiome, the coagulation effects, autoimmunity. And then also, how stress plays a role. You know, I think that, it's very clear that stress has a negative impact on the immune system and really understanding how that plays out for each patient is important.

And looking at things like the limbic system dysfunction is important, especially for patients who have mold exposure. And there's also this piece of the puzzle that so many patients are isolated.

This is a very isolating condition in so many ways. The medical system gaslights them. As their health declines, they lose the ability to gauge, engage in their life.

They lose friends, they lose their jobs. And all of that creates, trauma effects, which also has its impact on the immune system. And so there's a lot of different tools that you have to employ to try to address each of those issues.

And so botanical medicines are certainly a part of that. But, I look at diet, lifestyle, optimizing sleep, trying to slowly introduce activity as tolerated, really trying to help rebuild the mitochondria.

I find that the mitochondria is kind of that piece that is driving a lot of the immune dysfunction, because the immune system is so dependent on energy.

Mitochondria is the part of the cell that creates energy for us.

## Whole herb vs standardized extracts

And so it not only contributes to all the fatigue that my patients feel, but it also contributes to the inability of the immune system to mount an appropriate response.

And so there's a lot of different things that can help stimulate the mitochondria. Methylene blue, I'm finding, is quite effective in that regard for a lot of my patients.

And again, looking at the environmental impacts, a lot of my patients have heavy metals, pesticides, mold exposures that are a big part of what's driving the mitochondrial dysfunction specifically.

But the environmental, immune toxicity piece generally. Yeah. So there's a whole lot more going on than just just the infections and just dealing with the botanical medicine piece about unfortunately that's true for most patients.

Yeah. The botanicals are amazing in what they can do. But that was kind of my learning over the years. Is that to really for those patients that don't respond to the antimicrobials, you really have to dig deeper and really figure out why, the, the rule in medicine is if patients are getting better, you have to revisit the diagnosis.

And so there's that list of 16 things that are the diagnosis that we have to really figure out what needs to be healed for each patient. Yeah. It's funny a lot of patients when I'm like, okay, so, you know, we need to figure out the underlying cause.

And they're like, I have Lyme. That's my underlying cause. And like, yeah, but how many other underlying causes has this infection now made for you? You know, that we it's it's like Lyme is actually not at the bottom of the iceberg, you know.

Yes. I think that was a big learning for me is to, to understand that. And and really Lyme is a very small portion of the puzzle that I'm treating for most of my patients.

Yeah. Yeah. Exactly. So I don't want to ask you to speak for your patients, but give our listeners some idea of how your patients, respond to these botanical medicines and what their experience is using them.

So when you're able to match the botanical combination to the right patients, the results are very good. That's a

little bit of trial and error. So as I said, we're just kind of scratching the surface of understanding all of the different ways in which these herbs work.

And so part of it is figuring out the right herbs for the right patient and figuring out the right dosing. And then for patients who don't respond, you're having to figure out why is it that they're reacting to that, or is it a Herb Simon reaction that you want to push through because they're going to get better?

On the other side of it? Is it that their detox pathways are overloaded and they're just going to get worse and worse if you just continue to try to push through?

Is that, an allergic reaction? So there's a lot of kind of nuance in terms of understanding how each patient is responding to each herb. So I think it's hard to answer that question in terms of a linear answer of how patients respond to each herb, because there's a range of ways in which they respond.

And I think that patients know when they're on the right track. And so I find that usually within a few weeks or a couple months at most, you know, that if that combination of groups that you're trying out is really going to work for the patient or not, and for patients who it is working for, they're already on board.

They love it. They want to continue. And if it's not, then you have to go back and ask those deeper questions about why. Yeah, a lot of times, especially in the beginning, patients are like, I don't know, like I, I feel better, like I have this this enhanced sense of overall well-being.

You know? Or maybe it's hope, I don't know, but, you know, it's like something's shifted and there's almost like the sort of like peace that like, okay, I'm on the right track. Finally.

Yes. Not with everyone, of course, but with a lot of patients. And the other thing that I have found is there's a sedative effect sometimes when, when you when you hit the right constellation of herbs for that patient, when they take a dose, they'll just get really sedated and tired.

And I I've always found that when that happens, we're on the right track. Yeah. Yeah that's a good response. So when it comes to experts in botanical medicine or even in infectious disease, what what is the general thought of of how are of using botanical medicine to treat these types of infections?

I think it's an ongoing debate. You know, I have colleagues who don't feel there's any role for botanical medicine, and I have colleagues who feel like botanical medicine is the only way that we should be using the only tool that we should be using as an antimicrobial to treat these patients.

So, I, I think, you know, it's it's unsettled science.

## Dosing strategies and patient sensitivity

We're all trying to figure out how to help our patients through the toolbox that we think is most effective. I think that botanical medicines have a lot to offer these patients.

I think we already have a large understanding of how to use them very effectively. And I think that with more money to fund more research, we can get even more precise in that, in that understanding.

Yeah, that would be great. So can you share with the listeners a little bit about, like the regulatory status of herbal medicines, like, do they fall into the same category as, like just general supplements, or can you speak to that aspect a little bit?

Yes. So the FDA, the Food and Drug Administration thinks of herbs as food, so they aren't regulated in the same way as drugs. And there's kind of pros and cons to that.

But one important thing for consumers to understand is it's in large part it's up to each individual botanical company

to regulate their own quality control.

So you definitely want to find botanical companies that have a high level of quality control, because there's a lot of issues that arise. Sometimes their herbs aren't even what they are labeled as.

So you could be buying something, you know, that says it's crypto lupus and it's not. We're living in an increasingly toxic world. So unfortunately, heavy metals and pesticides can be contaminated, contaminating these herbal products.

So it's good to find companies that will test their batches for those contaminations. And there can also be microbial contamination on these herbs. So I think that's a really important point is they're not really regulated in the same way as drugs.

And so you want to really find companies that have a high level of quality control. Yeah. And I think you hit the most important things. So just to take it a step further, though, you know, not all of the species of owner of a particular herb, for example, are going to give you the same outcome.

So, you know, not only is it important to know if it's the correct herb like crypto lapis, right. But you want to actually identify it down to the species so that you know that you're using the species of herb that you think you're using, you know, and then again, making sure it's clean of heavy metals, pesticides, mold.

Right. Like, oh my gosh, if we're giving someone a whole encapsulated herb and it has mold on it, right. Like that's going to make them so much worse.

You know, in addition to other microbial things that it could be contaminated with as well as heavy metals. So it's just you can make someone so much worse if you're giving them dirty herbs and so, right.

Those reactions could look very much like a climate reaction. And so it might be difficult to differentiate. Is this die off meaning the herb is actually working or is there something toxic in that herb?

And you're exactly right about the species level issue. We actually paid to do DNA analysis for our in Korea sauce in our lab study, because there's such a big problem with getting the right and carrier species.

So yeah, there's there's a lot to think about. Yeah. Yeah. And make sure that the, you know, that the lab that's testing is not on the payroll of the company that you're using.

You want it to be an independent third party laboratory that's doing the testing. So very important. Okay. So would you say there are any potential long term benefits of using botanical treatments?

Well, I think that's something else that, we don't have a lot of data on in terms of human data. Looking at patients taking herbs, you know, over several years.

So there's always this risk benefit analysis. Now, in my mind, I think that the herbs are safer than doing antibiotics over years, but we don't have head to head, double blind, placebo controlled studies to prove that.

But I think for patients, you know, again, it in my mind it all comes back to how is each patient responding. And so if a patient is responding having clear clinical benefit month over month, I think the risk benefit is in favor of continuing to use that.

Or and again, I use blood checks to assess that. Right. Like if their liver function is suddenly going out of whack, then we we have to assess why that is.

But I think there is a safe way to use these herbs long term.

## Holistic treatment beyond infections

And in terms of the specific benefits, you know, it kind of goes back to what we were talking about at the outset as we're thinking about each herb for each patient, we're often choosing herbs that are targeting specific mechanisms of action that we think need to be addressed in that patient, you know, whether it's killing a pathogen, reducing inflammation, addressing biofilm.

We actually haven't talked about biofilm yet, but that's another reason why a lot of patients don't get better. And herbs can address biofilm quite effectively.

And so there's, a number of long term benefits that can be utilized because these herbs have so many different mechanisms by which they they work. But again, it would be great to have some money to study some of these longer term effects, both in terms of benefit and also proving safety.

Right. Yeah, I think the biggest concern of mine is that, you know, most of the herbs are much more gentle on the microbiome, obviously, than a pharmaceutical antibiotic.

But I think over time, especially if you're using a lot of them, I mean, you can have some effect to the microbiome. Again, nowhere near as much as using pharmaceutical antibiotics.

But you know, I think it definitely can play play a bit of a role over time. Going back to the immune system being the key thing that we're trying to recover and normalize, we can't have a normal functioning immune system if we don't have a healthy microbiome.

So that's that's my one concern. But I love how, you know, a lot of these herbs also have anti-tumor. Anti-Cancer, right. Like inflammation is the root of all chronic disease.

Right. So if we're using herbs that are anti-inflammatory anti-tumor, right. We're just we're getting this whole host of other benefit just, you know, in this toxic, inflammatory world that we live in.

So I love that we can get those side benefits, you know, from those herbs. I totally agree. And and I would just add to that, that what we've discovered is that some of the herbs that we use to treat tick borne diseases like Japanese knotweed, artemisia, eye cities, certain, turns out, are actually effective in treating Covid.

And one of the things that I noticed kind of early on in my practice is my patients who were being treated with botanical medicines were getting Covid less often and less severe cases than the patients that weren't getting the botanical medicine.

So that's another kind of potential benefit. Yeah. That was that was an amazing, thing to watch. I watched the same. We actually thankfully had no patients that ended up in the hospital at all with Covid.

I think that back there was one severely, severely immuno compromised patient who did end up in the hospital, but she also frequently ended up in the hospital. So.

But she's fine, thank goodness. Okay, okay. Okay. So as far as botanical medicines go, what's your opinion on any of them being able to prevent tick borne disease?

So do you believe there's any combination of anything that someone can take, you know, that lives in a highly populated area, you know, of Texas and tick borne disease or what's your opinion on that?

Well, we don't have data on it. The closest study I found was a study from Cuba, where they were using actually a homeopathic no showed to reduce the incidence of a different needle infection called leptospirosis.

So Borrelia, the bacteria that causes Lyme disease, is a spider kit. And there's a similar bacteria called leptospirosis. And they showed in this study in Cuba that when they gave a homeopathic dose of leptospirosis, they significantly reduce the incidence of leptospirosis compared to those patients that didn't get the treatment.

So I think that's interesting, and I think that it would be great to reproduce that study for Lyme and tick borne disease, and also do a study on botanical medicines.

We have basic science to support the idea that it should reduce the incidence, but we don't have any human data. I can tell you I was living in Maine for the last three years, and I was certainly self prophylaxis with, a botanical formula that included crypto lupus.

You know, I think it's definitely safer than prophylaxis with antibiotics. Yeah. For sure. I think there's a handful of herbs, too, that are very helpful if you start to take them when you first get bit, that can try to manage like the whole immune dysfunction.

## Prevention, acute treatment, and takeaways

Inflammatory cytokines cascade help to inhibit a lot of the enzymes that are activated that like break down the connective tissue and allow the spider kids to spread through the body.

My favorites for that is, Chinese skullcap, Japanese knotweed, ashwagandha. And then, of course, you know, we can use things like crop to Lepus and Sweet Annie, for tuna, you know, to get, like, a nice broad base so that while you're waiting for those tick past results to come in, you know you can be on something prophylactically that isn't a pharmaceutical antibiotic.

Yes, I totally agree. I think the botanicals have a lot to offer, both prophylactically and for those acute infections. And then also I think we we both kind of have that same approach where once we know there is an acute infection, the antibiotics work great in that setting.

Right? But I'm always combining the herbs because one of the questions we don't really know yet is how soon those persist or cells can form. And for most antibiotics they don't really treat those persist or cells.

And so I'm always sort of thinking about that, making sure that even the acute cases we're addressing, the biofilm and the persist or cells and those things that the antibiotics don't do a great job of killing.

Yeah. I was reading somewhere that like the biofilm formation can start within like 48 hours or something like that. Like it's wild. Yeah. And a lot of the herbs are really good.

And one of my favorite things actually is, at the special. Well, actually, this isn't a CME event, so packed to Sol. Do you know about packed us all right.

So you can use that to help to, inhibit biofilm formation and actually helps to break down like that lattice structure that is a piece of the biofilm.

And of course, most of the herbs that we use can be effective at breaking down the biofilm, as well as like grapefruit seed extract. Obviously the natto kinase Pro kinase that you mentioned, there's just, you know, so many things that we can do, like right at that, that onset.

Right. When you find the tick or find the bite that can kind of like prevent all of this from going sideways. That is such the goal, right? You know, one of the principles of metabolic medicine is prevention.

And if we can identify those patients early on and and get them appropriate treatment, it just makes such a difference. You can you can just say this whole downstream effect of all the chronicity that we see.

Yeah. So I put together a whole CME for just conventional docs, just to help them understand how to diagnose and treat acute Lyme. We in natural medicine, at least when I went to year, we didn't get a very good training on that.

And conventional MDS don't get a great training on that either now. And neither did I. I learned it was, you know, basically a bull's eye rash, some joint pain.

And you took 21 days at oxy and you're a good that fits. If only it were that simple. I mean, luckily, we learned 21 Days of Doxy because most other, you know, most conventional doctors think it's, you know, 10 to 14 or anyways, we won't even go down that rabbit hole.

We've gone down that rabbit hole in other talks on the summit. Before we end, tell our listeners, what do you think the top three take home points are?

Or if it's something you know that we haven't talked about that you'd like to put out there? Well, I think the first thing I want to tell everyone is there's hope, right?

Like this is such it can be such a demoralizing experience to have a chronic illness and feel like you're you can't get better. You can definitely get better.

I want to reinforce that, that there is a path back to health. There's a path back to getting your life again and restoring a quality of life. And I guess that leads to the second point I would make, which is make sure that you are finding a team of people that help you in that endeavor.

And part of that is finding providers that understand what you need and can identify those 16 diagnoses that are impeding you from getting well. And it's also about finding the support system in your life, too, you know, really relying on friends and family and figuring out what you need to heal.

And I guess the third thing is, since we talked about botanical medicine, I would say if you aren't already exploring botanical medicines as part of that path, I would encourage you to do so.

There's a bunch of providers out there that are skilled in it. Sadly, we lost Stephen Buettner last year, but he wrote a bunch of great books. I think they're a great way to help educate yourself on, botanical medicines if you have an interest in that. So.

So those are the three things you can get better. Make sure that if you aren't already, assemble a team to to help you in that endeavor and consider botanicals as part of that path for you.

Wonderful. Thank you so much. So once again, why don't you tell our listeners how they could find you? Yeah. So my, office phone numbers (415) 484-1240.

Although I will say that you'll probably get a faster response if you email us. And that's concierge at Healthier focus.com. Well, thank you so much, Doctor Leone, for being here with us tonight.

And thank you to all of you listeners. I hope that you found this information useful and that it helps you on your journey to healing Lyme. We'll see you next time. Take care.